

To: Winsor, Jennifer (CC) <Jennifer.Winsor@gov.mb.ca>

Subject: Alamos Gold – Gordon Mine Environment Act Proposal - File No. 6074.00

The attached material can be placed on the public registries for the above project:

Technical Advisory Committee Comments on the Environment Act Proposal (30 pages)

Manitoba Agriculture and Resource Management, Water Science and Watershed Management

Manitoba Agriculture and Resource Management, Wildlife and Fisheries

Manitoba Agriculture and Resource Management, Wildlife and Fisheries, Fisheries Section

Manitoba Conservation and Climate, Drainage and Water Rights Licensing

Manitoba Sport, Culture and Heritage, Historic Resources Branch

Manitoba Agriculture and Resource Management, Lands Branch

Manitoba Infrastructure, Highway Planning and Design Branch

Manitoba Conservation and Climate, Office of Drinking Water

Manitoba Conservation and Climate, Parks and Protected Spaces Branch

Manitoba Agriculture and Resource Management, Forestry Branch

Manitoba Conservation and Climate, Drainage and Water Rights Licensing

Jennifer Winsor, P.Eng.

Environmental Engineer, Environmental Approvals Branch

Manitoba Conservation and Climate

**Review of Alamos Gold Inc - Lynn Lake Gold Project –
McLellan Mine Site and Gordon Site Environment Act Proposal**

Date: October 16, 2020

Andrew Burton

The Water Quality Management Section (WQMS) at Agriculture and Resource Development (ARD) has reviewed the Alamos Gold Inc. - Lynn Lake Gold Project – MacLellan Mine and Processing (File 6073) and Gordon Mine (File 6074) Environment Act Proposal. While the proponent/licencee (Alamos Gold Inc.) and their hired consultant, Stantec Consulting Ltd., have provided detailed Environment Act Proposals for both the MacLellan site and Gordon site, additional questions and concerns remain related to impacts to water quality and water resources. These concerns are discussed below.

The Environment Act Proposals (EAPs) acknowledge that historical mining activities have changed water quality, water quantity, and hydrological flows in the region. The EAPs acknowledge that construction, operation, and decommissioning of the MacLellan and Gordon mine sites are expected to: further degrade surface water and groundwater quality; alter water quantity, hydrological flow pathways and drainage patterns; and adversely impact fish and other aquatic life exposed to elevated concentrations of contaminants. For example, impacted surface waterbodies nearby the MacLellan mine site include the Keewatin River (owing to effluent discharge from the collection pond) and other nearby tributaries draining East Pond, Payne Lake, and Minton Lake (owing to groundwater seepage from the Tailings Management Facility [TMF] and Mine Rock Storage Area [MRSA]). At the Gordon mine site, impacted surface waterbodies include Gordon Lake, the Farley lakes (i.e., West, East), Swede Lake, and potentially other downstream waterbodies (owing to groundwater being pumped from the groundwater interceptor wells and effluent discharges). The proponent states that by implementing mitigation and environmental protection measures including a site-specific Surface Water Monitoring and Management Plan, Groundwater Monitoring Plan, and Erosion and Sediment Control Plan (among others), the residual environmental effects to water quality, water quantity, and aquatic life will be reduced. The MacLellan EAP reports that changes in water quality and quantity are not expected to be significant because changes in lake levels and streamflows are not predicted to exceed 30% relative change from existing conditions. The WQMS is concerned that a change in 30% from background conditions could be significant. Previous work characterizing and modeling baseline concentrations and impacts of mining activities at the MacLellan site on surface water indicates that the primary contaminants of concern affecting water quality are aluminum (Al), arsenic (As), copper (Cu), cadmium (Cd), and fluoride (F), with concentrations expected to exceed provincial and federal aquatic life guidelines. Note that the Government of Canada is in the process of developing a new aquatic life guideline for copper based on the Biotic Ligand Model, which is expected to be more scientifically accurate than current guidelines. The contaminants of concern at the Gordon site include fluoride (F) and phosphorus (P); albeit concentrations are not expected to exceed provincial and federal guidelines or cause eutrophication problems. Given the importance of the ecological health of waterbodies in the region of Lynn Lake (e.g., critical for spawning, rearing, and overwintering for several fish species), the elevated contaminant concentrations at various stages of mining activities at both the MacLellan and Gordon mine sites are concerning. For many variables, the exceedances occur post-closure after the sites have been decommissioned. At both sites, the proponent plans to ask for a Fisheries Act Authorization from the Department of Fisheries and Oceans (DFO) for the “harmful alteration, disruption, or destruction” of fish habitat. Appendix A (Summary of Effects Assessment) highlights that the change in water quality and change in fish health, growth, and survival in the local assessment area are to be adversely affected and states these residual impacts are irreversible over the long-term upon decommissioning/closure.

Both EAPs suggest effluent discharge will follow authorization of the MDMER (Schedule 4). In cases where the MDMER limits are not acceptable for discharge, the water will be treated as per the Fisheries Act and Water Protection Act of Manitoba. Note that the MDMER regulations are not necessarily protective of the environment, but are baseline limits established across the country based on current technology. Based on the information above documenting contaminants of concern, it will be the responsibility of the Environmental Compliance and Enforcement Branch to determine if additional limits will be required for the MacLellan and Gordon mine site EAPs. It is important to note that recent changes to the MDMER occurred on June 1, 2020 and this should be reflected in any future Environment Act Licenses. As part of the MDMER, Environmental Impact Assessments (EIAs) will be required periodically throughout construction, operation, and following closure. There is no mention of the importance of EIAs within both the MacLellan and Gordon EAPs. The WQMS would be interested in reviewing the EIA reports, when available, particularly as it relates to water quality and water resources. It is recommended that surface and ground water quality monitoring results from nearby both mine sites is continually compared to modeling projections, and that models be adjusted accordingly. While modeling is a useful tool, it is important to ensure that the model predictions are in line with observed concentrations of contaminants.

Should you have any further questions or comments, please do not hesitate to contact Andrew Burton by email (Andrew.Burton@gov.mb.ca) or telephone (204-945-5574).

Sincerely,

Andrew Burton

cc: Nicole Armstrong, Director of Water Science & Watershed Management, Manitoba Agriculture and Resource Development

Alamos Gold – Gordon and MacLellan Site Environment Act Proposals

Wildlife Comments

Section Specific Comments

2.8 Project Phases

2.8.1 Construction

Removal of overburden for the open pit will occur in preparation for mining activities. Suitable overburden and excavated soil will be used on-site during construction with excess stored on-site for future use in active closure activities.

Will overburden also be removed from the mine rock storage area prior to rock placement and stored for future use during reclamation of the mine rock storage area?

3.0

3.1 Regulatory Engagement

Table 3-1 Provincial Government

Manitoba Sustainable Development was separated in 2019 into two departments: 1) Conservation and Climate, and 2) Agriculture and Resource Development. Please include both departments as regulatory authorities in the table.

3.2 Stakeholder and Public Engagement

Please include local outfitters and registered trapline holders in the list of stakeholders to engage on the projects.

6.6 Vegetation and Wetlands

6.6.2.2 Mitigation Measures

- Sensitive areas, such as wetlands, will be buffered by 30 m and clearly marked prior to clearing.

Please clarify what types/classes of wetlands will be buffered, and if this only applies to clearing associated with project infrastructure, not overburden stockpiles and mine rock storage areas? Given the size of the project area, disturbance to some wetlands will not be avoidable in the overburden stockpiles and mine rock storage areas.

6.7 Wildlife and Wildlife Habitat

6.7.2.1

The increase in traffic due to ore hauling to stockpile sites and the ore processing plant at the MacLellan site during operation will result in a greater potential for wildlife/vehicle collisions and mortality along the access roads and PR 391.

6.7.2.2 Mitigation Measures

Implement road safety measures such as speed limits and signage to reduce the chance for wildlife collisions both on-site and between sites.

We appreciate the inclusion of these statements. The Branch is also concerned about increased wildlife mortality resulting from vehicle collisions, specifically within local moose populations. We suggest that vegetation along access roads is cleared and maintained to ensure good line of sight to reduce wildlife collisions. Please further describe mitigation that will be applied from the onset, collision monitoring, and triggers that will require further action. The Wildlife Monitoring and Management Plan should include details on how and when all mortality observations will be reported to the Regional Wildlife Manager.

6.7.2.2 Mitigation Measures

Bird deterrents, if required, to keep migratory birds from using collection pond during construction and operation and/or the open pit during closure.

Bird deterrents, if required, to keep migratory birds from using the TMF and contact ponds during construction and operation and/or the open pit during closure.

Please elaborate on the potential negative interactions between the Project collection ponds, contact ponds, and tailings management facility, and Migratory Birds, amphibians and mammals.

Flag environmentally sensitive areas prior to clearing and construction, and evaluation of the features for additional mitigation measures.

Please further describe mitigation that will be applied to the various sensitive areas when located. The Wildlife Monitoring and Management Plan should include details on surveys to locate sensitive areas prior to clearing and construction, and how and when sensitive areas will be reported to the Regional Wildlife Manager.

Design for scheduling vegetation clearing and site preparation activities outside the breeding period for migratory birds.

Vegetation clearing and site preparation activities should also be scheduled outside the boreal caribou calving and calf-rearing period from May 1 to June 30.

List of Maps

The EAP(s) speak to a Regional Assessment Area. This is not described/illustrated on any of the maps. Please include a map with this area identified.

General Comments

- 1) The Wildlife and Fisheries Branch remains concerned about impacts to regional boreal woodland caribou populations. Surveys conducted by the proponent and Manitoba Agriculture and Resource Development, Wildlife and Fisheries Branch, do not identify the mine sites as currently used by boreal caribou in the winter. Spring calving, summer of fall/rut areas for local boreal caribou are currently unknown. The mine sites are suitable habitat for boreal caribou and on the periphery of known critical winter habitat areas. The proponent should continue to keep caribou as a species of interest when assessing the potential impacts of all exploration, extraction, and hauling programs in the region.
- 2) The Wildlife and Fisheries Branch looks forward to reviewing the Wildlife Monitoring and Management Plan and Environmental Effects Monitoring Plan, including the Wildlife and Tailings Management Facility sub-plan that is mentioned in Chapter 23 of the Federal EIS submission. These documents should be submitted, reviewed by the Wildlife and Fisheries Branch, and approved by Environmental Approvals Branch prior to commencing project construction.
- 3) The fisheries assessment touches on the dewatering at the Gordon Site, however more information should be provided on potential impacts to wildlife currently using the East and Wendy Pits during the dewatering process. How will any negative impacts be mitigated?
- 4) The Branch remains concerned about all increases in linear corridors on the landscape within this region. Preference is for any future power infrastructure (transmission and distribution lines) to follow existing roads or RoWs.
- 5) It appears that a 30 m buffer will be applied between the open pit area and the Keewatin River. We suggest that this should be increased to limit disturbance within the 99 ft (one and one-half chains) public reserve designated within The Crown Lands Act.
- 6) Noise levels related to blasting and haul traffic are not listed. Can these levels be estimated, and if so please include details on levels and potential effects to wildlife.

From: [Janusz, Laureen R \(ARD\)](#)
To: [Winsor, Jennifer \(CC\)](#)
Cc: [Long, Jeff \(ARD\)](#); [Kitch, Ian \(ARD\)](#)
Subject: EAP 6074.00 for TAC Review - Alamos Gold Inc. - Gordon Mine - File No. 6074.00
Date: October 28, 2020 3:30:36 AM
Attachments: [image003.png](#)
[EAP Gordon Mine Site Fisheries Review Comments.xlsx](#)

Hi Jennifer,

Fisheries section (regional and head office) of Wildlife and Fisheries Branch has reviewed this EAP for the Gordon Mine. Many aspects of this operation, be it changes to groundwater and surface water quantity and quality, discharges to the receiving environment, direct alteration to fish bearing waters (e.g. new diversion channel between Gordon and Farley Lakes) will have direct and/or indirect effects on fish and fish habitat during the construction and operation of this facility and potentially in perpetuity following mine closure.

As noted in the proposal many of the water bodies within the PDA and certainly LAA provide seasonal and/or year round habitat for small and large bodied fish. From provincial fisheries role as managers of the fish and provincial crown role of “owning” the habitat we would not want to see project effects to water bodies within the PDA which provide direct or indirect habitat for bodies of water downstream from the mine site (e.g. Hughes River, Simpson, Swede, Ellystan, etc.) altered or impacted to the extent in which these water bodies are no longer able to provide for current and historical fishing uses (i.e. recreational, commercial and domestic fisheries).

Furthermore as noted in the EAP Lake Sturgeon have been caught in Hughes River. They have also been caught in Hughes Lake. These fish are part of the western Hudson Bay population and are classified as “endangered” by the Committee on the Status of Endangered Wildlife in Canada. Provincial fisheries supports this designation for this population and would want to ensure that Lake Sturgeon are considered when determining mine effects.

While in general the description of potential mine effects was quite thorough, the EIS was referenced throughout as providing much of the detail of the assessment effort and results. This document was not available on either the provincial or federal websites. For the review of the EAP, we have attached a Table that highlights areas where we had comments/concerns or further clarification is required. Overall though it does not seem that there is a lot of detail on fish utilization, fish populations within the water bodies within the PDA/LAA nor the degree to which these water bodies / fishes support downstream fish populations to support the proponent’s conclusion of “the residual environmental effects on fish and fish habitat are predicted to be not significant”.

There are changes during the operation of this project which are longer in duration (approximately 6 years), that while reversed upon completion, the original function/role may have been lost/changed during this time, without understanding the implications this may have. Which speaks to the concern that there does not appear to be a fish monitoring plan included during the operation or post closure of the mine to confirm or refute any modelling and /or predictions made.

While the consultant has worked with Department of Fisheries and Oceans and has indicated a Fish

Habitat Offsetting Plan has been submitted, we have not had any discussions with DFO on these projects. As part of DFO's process, should an Authorization be required, DFO will need to consider provincial Fisheries Management Objectives. While we currently do not have anything specific for this region, one of our objectives would be to ensure ongoing fisheries uses are sustained and Lake Sturgeon populations are enhanced where feasible to do so.

Thank you.

Laureen Janusz
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Wildlife and Fisheries Branch
Agriculture and Resource Development
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From: Winsor, Jennifer (CC) <Jennifer.Winsor@gov.mb.ca>
Sent: September-11-20 9:29 AM
To: Kiss, Brian (ARD) <Brian.Kiss@gov.mb.ca>; Janusz, Laureen R (ARD) <Laureen.Janusz@gov.mb.ca>; Porteous, Marianne (ARD) <Marianne.Porteous@gov.mb.ca>; Conrod, Matt (ARD) <Matt.Conrod@gov.mb.ca>; Frias, Winifred (ARD) <Winifred.Frias@gov.mb.ca>; Hastman, David (ARD) <David.Hastman@gov.mb.ca>; Armstrong, Mike (ARD) <Mike.Armstrong@gov.mb.ca>; Armstrong, Nicole (ARD) <Nicole.Armstrong@gov.mb.ca>; Phipps, Graham (ARD) <Graham.Phipps@gov.mb.ca>; +WPG1195 - Mines BR (ARD) <mines_br@gov.mb.ca>; Mraz, Peter (ARD) <Peter.Mraz@gov.mb.ca>; Molod, Rommel (CC) <Rommel.Molod@gov.mb.ca>; Beruar, Omkar (ARD) <Omkar.Beruar@gov.mb.ca>; Harman, Kristal (CC) <Kristal.Harman@gov.mb.ca>; Hawryliuk, Yvonne (CC) <Yvonne.Hawryliuk@gov.mb.ca>; Vitt, Cory (CC) <Cory.Vitt@gov.mb.ca>; Hay, David (CC) <David.Hay@gov.mb.ca>; Cunningham, Neil (CC) <Neil.Cunningham@gov.mb.ca>; Kelly, Jason (CC) <Jason.Kelly@gov.mb.ca>; +WPG574 - HRB Archaeology (SCH) <HRB.archaeology@gov.mb.ca>; Roberecki, Susan (HSAL) <Susan.Roberecki@gov.mb.ca>; Roberts, Tracy (HSAL) <Tracy.Roberts@gov.mb.ca>; +WPG969 - MIT Environmental Services Section (MI) <MITEnviServices@gov.mb.ca>
Subject: Environment Act Proposal for TAC Review - Alamos Gold Inc. - Gordon Mine - File No. 6074.00

Good morning,

Your review and comment is requested for the following Environment Act Proposal submitted pursuant to The Environment Act:

<https://www.gov.mb.ca/sd/eal/registries/6074alamosgold/index.html>

Please let me know if you are unable to review the Proposal. A non-reply will be considered as indicating your department has reviewed the Proposal and has no concerns.

Any comments you have on the Proposal should be emailed to me on or before by **October 16th, 2020**.

****No hard copies will be provided****

Thank you,

Jennifer Winsor, P.Eng.

Environmental Engineer, Environmental Approvals Branch
Manitoba Conservation and Climate
Jennifer.Winsor@gov.mb.ca / Ph: 204-945-7012
1007 Century Street, Winnipeg, MB R3H 0W4

To report an environmental emergency please call the 24/7 Emergency Response Line at 204-944-4888 or 1-855-944-4888.

Almos Gold_GordonGold Mine_				
Page No	Section	Text	Comments	
21/116	2.4.1.2	preliminary sampling results indicate that mine rock (618,100 m ²) from the Gordon site contains potentially acid generating (PAG) materials and shows a leaching potential for arsenic and other trace elements (see Chapter 5 in the EIS, Section 5.2.6). Blending of PAG and non-PAG material and/or dry and/or wet covers will be used to control ARD/ML from mine rock. By contrast, ore stockpiles (33,800 m ²) are not expected to generate ARD and have moderate leaching potentials for aluminum, fluoride, silver, and copper.	The MacLellan proposal provides a percentage of PAG. Will that be determined for this site?	
		Seepage/runoff collection ditches will be constructed around the perimeter of each stockpile/ storage area and directed to a series of sumps and/or small ponds at topographic lows. Water collected in the sumps and/or small ponds will be pumped to a site water management pond for management and/or treatment (if required) prior to discharge (see Map 2-1).		
22/116	2.4.2.1	Raw water at the Gordon site is required for dust and fire suppression, safety showers, and for the truck shop and truck wash. Normal freshwater requirements are expected to be 10 m ³ /hour. Freshwater will be pumped from Farley Lake to a pumphouse located on the south shore of Farley Lake, and then to a freshwater tank located at the Gordon site. The suction pipe will be buried and heat-traced to prevent freezing (Ausenco 2019).	Can the pipe to Farley Lake not be directional drilled?	

23/116	2.4.2. 8	As part of the proposed development at the Gordon site, the existing, previously constructed diversion channel flowing from Gordon Lake to Farley Lake will require adjustment to the north (see Map 2-1). The channel will be designed to safely pass a 1 in 100-year return period storm and will take long-term fish passage and habitat between Gordon and Farley lakes through a tributary into consideration.	The existing man made channel provides fish passage. Is the ability for passage a consideration or an intended outcome for this new channel?	
		A series of groundwater interceptor wells located between the ultimate footprint of the open pit and Gordon and Farley lakes will be used to mitigate a reduction in groundwater discharge to Gordon and Farley lakes as a result of open pit dewatering during mine operations and pit filling during mine closure. At this time, the interceptor wells are anticipated to be sited approximately 40 m from the boundary of the ultimate open pit limit. Groundwater extracted from the interceptor wells (originating from the adjacent lakes) will be pumped to a water management pond prior to being recirculated to Gordon and/or Farley lakes.	Where will the heat exchangers referenced later in the proposal be installed?	
		Alamos will request a paragraph 34.4(2)(b) and 35(2)(b) Fisheries Act authorization from Fisheries and Oceans Canada (DFO) for the HADD of fish habitat that may occur as a result of Project activities, including in the existing diversion channel at the Gordon site. Any Fisheries Act authorization will not be issued by DFO until after the Impact Assessment Agency of Canada (formerly Canadian Environmental Assessment Agency) decision on the Project.	DFO will need to consider provincial Fisheries Management Objectives	
24/116	2.4.3. 1	Sewage will be conveyed by gravity to two septic tanks at the truck shop and administration building. It will then be trucked to MacLellan for processing at a 60 m ³ /day sewage treatment plant.	Was this effluent accounted for in the Maclellan proposal?	

26/116	2.7	Decommissioning/active closure is scheduled to begin in Year 6 at the Gordon site, and is expected to take approximately five to six years to complete. Active closure can be described as the anticipated rehabilitation efforts that will be completed at the Gordon site. Active closure will be followed by approximately 10 years of post-closure, which is the time period during which active reclamation measures are complete, but monitoring is still required. Pit filling is expected to take 11 years at the Gordon site under average conditions. Permanent closure will occur when the site is stable, and monitoring is no longer required.	How long is the proponent responsible for monitoring? Until permanent closure?	
26/116	2.8.1	Any watercourse re-alignment works that may be required at the Gordon site will be initiated early.	Is this referring to the new channel being built between Gordon and Farley, and potentially upgrades to the water course crossing, or are there others?	
	2.8.2	The amount and frequency of blasting and drilling required during the operation phase of the Project will be determined during detailed mine engineering. Blasting is anticipated to occur approximately two to three times per week, or approximately every third day, on average. Blasting is anticipated to be scheduled to coincide with shift change (i.e., approximately 7:00 pm).	Comment on blasting/drilling provided further down.	
	2.8.3	A Conceptual Closure Plan has been developed	This was submitted through the federal EIS but not to MB? Does it differ in the amount of detail provided in this summary?	
		Reclamation of MRSAs with suitable covers as needed, revegetation, and establishment of stable drainage conditions.	Any consideration to dump the PAG rock into the open pit at closure?	

30/116	2.9.2.	<p>Re: contact water, collected water will be pumped to the water management pond. The water management pond has been sized in consideration of the retention time for the settling of suspended solids. Identification of the discharge locations for the Gordon site will be confirmed during detailed engineering. Discharge from the site water management pond is anticipated to be to Farley Lake at the Gordon site.</p>	<p>Will there be multiple discharge locations or just the one from the water management pond?</p>	
		<p>Re non-contact water_Where practical, collection ditches will be constructed to divert non-contact water around Project facilities to natural drainages. Consideration will be given to designing the channels to support fish habitat, where appropriate and practical. It will be determined during development of the Closure Plan whether the channels will remain or be re-configured following decommissioning/closure of the mine.</p>	<p>When in the process is this consideration made?</p>	
44/116	6.3.2.3	<p>The residual effects from the initial dewatering of the historical Wendy and East pits will be most notable during the construction and operation phases. The predicted change in the groundwater table and resulting drawdown at the end of the construction period in the area of the Wendy and East pits, is a reduction of approximately 1.0 m or more within 800 m of the pits. With respect to groundwater discharge to surface water, discharge to <u>Marie Lake</u> is predicted to be 227 m³/day less at the end of construction compared to baseline conditions. Farley and Gordon lakes are also predicted to change from receiving groundwater to become groundwater recharge features at the end of construction. The loss of groundwater discharge to Farley and Gordon lakes will be mitigated by the return of pumped water from the groundwater interceptor wells. Changes to the groundwater discharge rates for remaining lakes and watercourses are expected to be relatively small (generally less than 86 m³/d) compared to baseline conditions.</p>	<p>Although the loss of groundwater discharge is going to be mitigated by returning pumped water from the gw interceptor wells, what is the loss of groundwater discharge to Farley and Gordon Lakes predicted to be? What are the implications of the decrease in groundwater discharge to surface water at Marie lake to fish? The ability of small bodied fish to overwinter?</p>	

		<p>During operation, dewatering of the open pit will lower the water table by up to 1 m that extends approximately 1,200 m from the open pit, increasing to more than 10 m within 600 m of the open pit. <u>Groundwater drawdowns of greater than 10 m are predicted to occur beneath a small portion of wetlands located north to northwest of the open pit and PDA at the Gordon site.</u> Changes in groundwater flow and discharge to surface water features due to dewatering are predicted for Gordon, Farley, and Marie lakes where the lakes will shift from receiving groundwater under baseline conditions to become groundwater recharge features at the end of the operation phase. For Marie Lake, a reduction in groundwater levels of up to 1 m to the north of the lake compared to baseline condition is predicted, resulting in a reduction in groundwater discharge to the lake by 246 m³/d compared to baseline conditions.</p>	<p>Do the wetlands where gw drawdown of more than 10 m is predicted to occur provide seasonal habitat for small and large bodied fish? During the operation phase how much more of a decrease is predicted in the gw discharge to Farley and Gordon Lakes.</p>	
45/116	6.3.2.3	<p>During dewatering of the historical pits and open pit, treatment will be implemented, if required, to meet regulatory discharge criteria prior to discharge to the environment. During construction, recharge originating from the historical MRSA's are predicted to be redirected from surface water receivers to the open pit. During operation and closure, groundwater recharge from the MRSA is predicted to be elevated above the drinking water guidelines for nitrate+nitrite, total cyanide, sulphate, aluminum, antimony, arsenic, manganese, sodium, and/or uranium. The predicted groundwater flow pathway of seepage from the MRSA is mainly confined to the PDA with a small portion extending into the LAA until the seepage originating from the MRSA discharges to surface water.</p> <p>The main surface water receivers of seepage from the MRSA at the Gordon site are Gordon Lake, Farley Lake, and Susan Lake. With mitigation and environmental protection measures, the residual environmental effects on groundwater quantity and quality are predicted to be not significant.</p>	<p>Given surface waters will receive seepage, are these predicted elevations seen when looking at Manitoba's SWQO's for Aquatic Life?</p>	

	6.4.1.	Surface Water_ Water in the Wendy Pit and East Pit have elevated concentrations of some general parameters relative to background levels, are deep (>70 m), and chemically stratify year-round, suggesting that metal leaching from the exposed pit walls has affected water quality in the pits.	What parameters are elevated?	
46/116		General flow direction in the Gordon LAA is north to south from Gordon Lake towards Ellystan Lake. Within the LAA, water flows from Gordon Lake to Farley Lake through a constructed diversion channel, from Farley Lake to Swede Lake through an approximately 4 km long, beaver dam impounded stream, and from Swede Lake to Ellystan Lake. Baseline water quality guideline exceedances in the Gordon site LAA include nitrite, fluoride, total phosphorus, total aluminum, total arsenic, total hexavalent chromium, total copper, total iron, and total zinc.		
		At the Gordon Site, flows from the interceptor wells will affect downstream surface water flows in hydraulically connected water bodies by changing historical discharge patterns. Contact water at the site will be gravity-drained towards collection sumps and pumped to the collection pond, changing local drainage patterns, and affecting the quantity and timing of flows in downstream water bodies. During operation, changes to water quality at the Gordon site may result from discharge of groundwater pumped from the groundwater interceptor wells to Gordon and West Farley Lakes and discharge of contact water from the collection pond to West Farley Lake.	In what way is the quantity and timing of flows in downstream water bodies affected by the discharge of the contact water? On maps provided only Farley Lake is identified. Is West Farley referencing the larger area of the lake closest to the mine?	
47/116	6.4.2. 2	Designing contact water collection ditches to convey the 1:25-year storm event and with positive gradients to limit standing water and maintain positive flow. <ul style="list-style-type: none"> • Designing contact-water collection ponds with active water storage that considers ice thickness during winter. 	is 1:25 year storm event enough given unprecedented storm events. What are the collection ponds being designed to?	
		Aerating East and Wendy pits to encourage precipitation of elements that form oxides (e.g., iron oxide) and to break down thermal stratification prior to dewatering. <ul style="list-style-type: none"> • Aerating groundwater from groundwater interceptor wells to encourage precipitation of elements that 	Mentioned elsewhere but again what type of water quality monitoring is proposed of the pit water and gw from interceptor wells.	

		form oxides (e.g., iron oxide) and to increase dissolved oxygen concentrations prior to discharge to Gordon and Farley lakes.		
48/116	6.4.2.3	At the Gordon site, the mean annual flows at inlets to Gordon Lake and Farley Lake are predicted to decrease by 29% and 27%, respectively, due to changes in catchment areas and runoff due to the Project infrastructure. These changes persist throughout future mine phases into post-closure.	Are the decreases in MAF at the inlets to Gordon and Farley lakes going to have implications for fish that access the outlet for spawning/nursery habitat? Will the outlet still be accessible with these predicted decreases and under low flow years?	
		During construction at the Gordon Site, the mean annual flow at the <u>outlet</u> of Gordon Lake (QF03) is predicted to <u>increase</u> by 7% and is primarily due to the addition of pumped flows from the interceptor wells. Farley Creek (QF05) is anticipated to experience an <u>increase</u> in mean annual flows of 66% due to the addition of dewatering flows from the pits. Conditions downstream of Farley Lake are anticipated to experience similar monthly patterns, but reduced or attenuated effects due to the larger waterbodies with higher flows. During operation, mean annual flow in Farley Creek is anticipated to <u>increase 43%</u> , with similar reduced/attenuated flows downstream of the PDA. During decommissioning and active closure, mean annual flow is anticipated to <u>decrease</u> by 6% and during post-closure by 8%.	Can Farley Creek channel accommodate a 66% increase in MAF? Will the increased flow be conducive for supporting the fish species (along with their associated life stages) that utilize this creek now.	
49/116		Ice regime at the Gordon site is likely to be affected within (and downstream of) Farley Lake due to the additional flows from the dewatering of the pits and the interceptor wells during the construction phase. These additional flows are anticipated to have temperatures that vary from		

		the historical baseline surface water temperatures.		
		At the Gordon site, fluoride and phosphorus were identified as POPCs because concentrations are predicted to exceed modelled baseline by more than 20% and applicable long-term water quality guidelines in modelled waterbodies. For the Gordon site, Project residual effects associated with the identification POPCs are predicted to be limited to the LAA and in West Farley Lake (for phosphorus) and Gordon Lake, West Farley Lake, East Farley Lake, and Swede Lake (for fluoride).	The values/evaluation seems to differ from the residual effects comments provided in the fish and fish habitat section re: fluoride and phosphorus. Why?	
49/116		With mitigation and environmental protection measures, the residual environmental effects on surface water quantity and quality are predicted to be not significant and the predicted changes are not expected to result in community (i.e., species composition and relative abundance) or population-level effects (i.e., survival, growth, or reproduction) to fish and aquatic life.	What is in place to evaluate this prediction and particularly the prediction of no changes in community or population level effects?	
50/116	6.5.1	One aquatic species at risk, the western Hudson Bay populations of lake sturgeon (<i>Acipenser fulvescens</i>), is present in the Hughes River. No other species at risk are expected within the LAA. Lake sturgeon is classified as “endangered” by the Committee on the Status of Endangered Wildlife in Canada.	Lake Sturgeon have also been captured in Hughes Lake. There is also a lake upstream of Hughes Lake thought to provide Lake Sturgeon spawning habitat.	
		Measured levels of metals in fish tissue were generally low and below guideline concentrations for protection of aquatic life and human consumption. Sediments at the sample sites in the LAA at the Gordon site were composed largely of silt and clay with metal concentrations generally below guidelines. Some exceedances were observed at Marnie Lake, Farley Lake/Creek and Susan Lake.	Exceedences were seen in which metals?	

51/116	6.5.2. 1	<p>during the construction phase, effects on fish and fish habitat include alteration of surface flows from changes to watershed boundaries and from dewatering, and changes in physical habitat due to Project infrastructure (i.e., diversion channel realignment between Gordon and Farley lakes). During the operation phase, changes in fish habitat will result from changes to groundwater, water withdrawals and discharges. During decommissioning/closure, changes to fish habitat will result from alterations in surface flows when groundwater fills the open pits, and changes in habitat area. At the Gordon site, changes to fish health, growth, and survival will result from releases of sediment, from dewatering of the East Pit and Wendy Pit during the construction phase, from discharge of groundwater pumped from the groundwater interceptor wells, from discharge of contact water during the construction and operation phase, and from overflow from the open pit to Farley Lake during the post-closure phase.</p>	<p>When will overflow to Farley Lake be likely_is it predicted to be continuous or intermittent in nature. Current East and Wendy Pits do not have good water quality_how is it proposed that the water from this pit will be any better?</p>	
	6.5.2. 2	<p>Mitigation: Constructing a new diversion channel to convey surface run-off from Gordon Lake to Farley Lake.</p>		
		<p>Constructing contact water collection ditches around the MRSAs, overburden stockpiles, and ore stockpiles to convey the 1:25-year storm event to collection ponds.</p>	<p>Is 1:25 year storm event enough?</p>	
52/116		<p>Directing contact water from the collection ditches around the MRSA, overburden stockpile, and mine infrastructure to the open pit during closure to reduce the filling period.</p> <ul style="list-style-type: none"> • Continuing to operate the groundwater interceptor wells during closure while the open pit fills with water and progressively reducing their pumping rates until the water level in the open pit reaches the elevation of the surrounding groundwater table. 	<p>How much is directing the contact water going to reduce the filling period of the pit? After the pit is filled where is the contact water from the collection ditches around the MRSA, overburden stockpile and mine infrastructure going? Would removing the interceptor wells facilitate the pit to fill quicker_is this a better</p>	

			offset from a WQ perspective then lower water in Gordon and Farley lakes?	
53/116		Implementing Project-specific environmental management and monitoring programs including:	No mention of a Fish Monitoring Plan or more broadly an Aquatic Effects Monitoring Plan.	
		Filling the open pits at closure with contact water to reduce the duration of pit wall exposure and to return groundwater levels to baseline conditions.		
		Constructing a new diversion channel prior to the decommissioning of the existing diversion channel between Gordon and Farley lakes to maintain water levels.	What habitat features will be incorporated into the design of this new channel?	
		Aerating groundwater from the interceptor wells in collection ponds to encourage iron precipitation and increase dissolved oxygen concentrations prior to discharge to Gordon Lake and Farley Lake.	What water quality monitoring of the well water and Gordon and Farley lakes is planned?	
		Limiting in-water works to outside of the northern Manitoba Restricted Activity Timing Windows for the Protection of Fish and Fish Habitat (DFO 2020b) as practical.	Not sure what "as practical means" and are there any in-water works other than the new channel between Gordon and Farley and the water intake at MacLellan planned?	
		<ul style="list-style-type: none"> Isolating in-water work areas and conducting fish rescues, including Wendy and East pits , the Diversion Channel, and other locations where instream construction will be required. 	Live Fish Handling Permit required	

		Using a heat exchanger, where required, to heat or cool water from the East and Wendy pits prior to discharge to Farley Lake during construction and water from the groundwater interceptor wells prior to discharge to Gordon and Farley lakes to maintain the temperature regime in both lakes so as not to negatively affect primary and secondary production rates and alter important behavioral cues for fish (i.e., spawning and overwintering cues).	How continuous is the monitoring of the water coming out of those pits to ensure temperature regimes in the receiving lakes are maintained? Are there lower and upper temperature limits in place and if so what are they?	
		Installing screens on the water intakes that are sized using DFO's "Interim Code of Practice: End of Pipe Fish Protection Screens for Small Water Intakes in Freshwater" (DFO 2020a). The screens will be sized based on the weakest swimming fish species in the Keewatin River (burbot, an anguilliform swimming species) and Farley Lake (white sucker and yellow perch, two subcarangiform swimming fish species).	As with MacLellan comments, DFO's End of Pipe Fish Protection does not prevent entrainment of eggs and larval fish.	
		Limiting the size, timing, and setback distances of blasting charges to avoid percussive injuries to fish or damage to incubating eggs. Blasting protocols tailored to the site and its fish species assemblages will be developed during Project permitting, using guidance outlined in the "Guidelines for the Use of Explosives In or Near Canadian Fisheries Waters" (Wright and Hopky 1998).	Is there any monitoring proposed for water bodies in close proximity just to ensure blasting is not having a detrimental impact to fish or damaging eggs.	
55/116		Establishing and enforcing a worker code-of-conduct for employees brought into work at the LLGP that would limit potential over-fishing of lakes, stream, and rivers in the Project area (e.g., restricting fishing in lakes of streams of a specific size, those used by local Indigenous communities for subsistence or traditional purposes, or determined to contain already depressed populations by MCC).	Per MacLellan comment please contact Ian Kitch Regional Fisheries Manager to discuss. Wildlife and Fisheries Branch is now situated under Agriculture and Resource Development.	

<p>6.5.2. 3</p>	<p>The main adverse residual environmental effect on fish habitat is direct losses of fish habitat and changes to water quality affecting fish health and survival. For effects to fish habitat, with the development of the Fish Habitat Offsetting Plan, as described in the federal EIS (Chapter 23, Section 23.5.15), no net loss to habitat is expected. The re-alignment of the existing diversion channel at the Gordon site will result in the harmful alteration, disruption, or destruction of fish habitat. Alamos will include a new habitat enhanced diversion channel as part of its application for a paragraph 34.4(2)(b) and 35(2)(b) Fisheries Act Authorization from DFO. Dewatering of East and Wendy pits at the Gordon site may result in a harmful alteration, disruption, or destruction of fish habitat due to the presence of fish. However, <u>the pits are artificial habitats and the fish are isolated from other populations.</u> Alamos will continue to discuss the pits with DFO and will include offsetting for the pits in its application for a paragraph 34.4(2)(b) and 35(2)(b) Fisheries Act Authorization, if required. For effects to fish health and survival, modelling was used to predict water quality at various nodes in lakes and streams at the Gordon site. Two parameters of potential concerns (POPCs) were predicted for the “expected case”, fluoride and phosphorus. Water quality modelling results indicated that the short-term (three month) increase in total phosphorus concentrations during construction and two-fold increase in inorganic nitrogen during operation would not be expected to result in eutrophication of West Farley Lake. For fluoride, the maximum predicted concentrations at the Gordon site were more than 2.5 times lower than the proposed toxicity benchmark of 0.5 mg/L for fish and aquatic biota;</p>	<p>In reviewing DFO's comments back to the proponent it looks like East and Wendy Pits are considered fish habitat despite being artificial habitats. Regarding the POPCs the statements here seem to differ from what was provided in the surface water quality section. Why?</p>	
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		therefore, adverse effects on fish health, growth, or survival are not expected.		
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From: [Wiseman, Kylene \(CC\)](#)
To: [Winsor, Jennifer \(CC\)](#)
Subject: FW: Environment Act Proposal for TAC Review - Alamos Gold Inc. - Gordon Mine - File No. 6074.00
Date: September 21, 2020 1:52:55 PM

Hello Jennifer,

The Water Use Licensing Section of the Drainage and Water Rights Licensing Branch has the following comment for this proposal:

As per the Environment Act proposal for Alamos Gold Inc. for the 'Gordon' site (Farley Lake), a Water Rights Application will need to be submitted for surface water use since the proposed water requirement will exceed 25,000L/day. In addition, a Water Rights Application will need to be submitted for groundwater use since the project will require aquifer dewatering.

Thank you,

Kylene Wiseman, P.Geo.

A/Head of Groundwater Licensing, Drainage and Water Rights Licensing Branch
Conservation and Climate

Kylene.Wiseman@gov.mb.ca / Tel: 204-945-7424

Box 16 - 200 Saulteaux Crescent Winnipeg MB R3J 3W3

Facts are key in the fight against COVID-19, visit [Manitoba.ca/covid-19](https://www.manitoba.ca/covid-19)

From: [+WPG574 - HRB Archaeology \(SCH\)](#)
To: [Winsor, Jennifer \(CC\)](#)
Subject: RE: Environment Act Proposal for TAC Review - Alamos Gold Inc. - Gordon Mine - File No. 6074.00
Date: October 20, 2020 2:29:14 PM

No concerns at this time as a heritage resource impact assessment was conducted for this project/proposal in 2015.

If at any time, however, heritage resources are encountered in association with these lands during testing and development, the Historic Resources Branch may require that an acceptable heritage resource management strategy be implemented by the developer to mitigate the effects of development on the heritage resources.

Sincerely,
Suyoko

Suyoko Anne Tsukamoto
Senior Impact Assessment Archaeologist
Historic Resources Branch | Manitoba Sport, Culture and Heritage
213 Notre Dame Avenue, Main Floor | Winnipeg, MB | R3B 1N3
e. suyoko.tsukamoto@gov.mb.ca

From: [Hastman, David \(ARD\)](#)
To: [Winsor, Jennifer \(CC\)](#); [Trim, Vicki \(ARD\)](#)
Subject: RE: Environment Act Proposal for TAC Review - Alamos Gold Inc. - Gordon Mine - File No. 6074.00
Date: October 19, 2020 11:06:05 AM

Hello Jennifer:

I circulated the IRMT (and Wildlife Manager had requested a 2 week extension). Here are the comments that I received.

Wildlife Manager (Vicki Trim) will provide comments prior to her 2 week extension request separately.

Comments received:

Forestry:

Below are the regional forestry comments related to the Alamos Gold Gordon Mine EA Proposal. There are a lot of duplications between this EA Proposal and the one for the McLellan Mine Site reviewed earlier today. Many of the same comments will hold true between the two documents.

6.8.2.2 Mitigation Measures

- Forestry Branch staff will work with the project proponent to ensure that the timber is removed in accordance with The Forest Act
 - If possible it would be beneficial to hire a local logging contractor and get the timber delivered to an end use destination such as local firewood markets or the CKPI mill in The Pas.
- it is assumed that Mines & Minerals Branch (or current name) will need to lead the Consultation process for this project and one of the components of that process is the removal of the forest cover. Forestry can provide program area specific information during the consultation process with local communities.

6.10.2.2 Mitigation Measures

- Forestry Branch staff will work with the project proponent to ensure that the timber is removed in accordance with The Forest Act
 - If possible it would be beneficial to hire a local logging contractor and get the timber delivered to an end use destination such as local firewood markets or the CKPI mill in The Pas.
- it is assumed that Mines & Minerals Branch (or current name) will need to lead the Consultation process for this project and one of the components of that process is the removal of the forest cover. Forestry can provide program area specific information during the consultation process with local communities.

9.0 Effects of the environment on the project

- applying FireSmart principles around the mine site infrastructure could help in reducing the impacts of forest fire as noted in this section
 - additional info on FireSmart is available if the proponent wants to pursue this topic

Table A-1 summarizes the impacts to productive forest resources with respect to impacts to wood supply and merchantable timber resources

The proponent needs to provide shapefiles for analyzing the impact to timber planned for removal/clearing in the exploration and development phases of the proposed operation. Impacts to forest resources will be analyzed and a timber damage appraisal invoice will be assessed for payment by the proponent. These shapefiles need to be submitted to Forestry Branch or Crown Lands Branch staff in the Northeast Region. Shapes can be submitted in .shp, .gpx, .kml or .kmz file formats prior to commencing operations.

Wildfires

It would sure be nice if all of the proposals started to include wildfire protection measures and/or risks as part of their package. This would include Fire Smarting their proposed development or how they plan to mitigate risk.

All other branches had indicated no comments.

David Hastman

| Regional Lands Manager | Lands Branch | Agriculture & Resource Development | Box 28, 59 Elizabeth Dr. | Thompson, Manitoba | R8N 1X4 |

| 📞 204-679-0987 | 📠 204-677-6359 | ✉ David.Hastman@gov.mb.ca | www.manitoba.ca

From: [+WPG969 - MIT Environmental Services Section \(MI\)](#)
To: [Winsor, Jennifer \(CC\)](#)
Subject: RE: Environment Act Proposal for TAC Review - Alamos Gold Inc. - Gordon Mine (File No. 6074.00) - MacLellan Mine (File No. 6073.00)
Date: October 8, 2020 9:28:06 AM

Good morning,

The following comments from MI's Roadside Development Section apply to both MacLellan Mine (File No. 6073.00) and Gordon Mine (6074.00):

We have had a look at these two and have no concerns.

Both proposals state that Alamos is in contact with MI regarding any updates needed to the accesses. Both the accesses to MacLellan and to Gordon Mines received permits when they were constructed. Also, it is stated that bussing will be provided for workers to cut down on the amount of passenger vehicles in and out of the mines.

Please note the following statutory requirements affecting PR 391.

Statutory Requirements:

*Under the Transportation Infrastructure Act, a permit is required from Manitoba Infrastructure to construct, modify, relocate, remove or intensify the use of an access. A permit is also required from Manitoba Infrastructure to construct, modify or relocate a structure or sign, or to change or intensify the use of an existing structure (including the alteration of existing buildings) within the **38.1 m** (125 ft) controlled area from the edge of the highway right-of-way.*

*In addition, a permit is required from Manitoba Infrastructure for any planting placed within **15 m** (50 ft) from the edge of the right-of-way of this highway.*

Thank you very much for the opportunity to review and comment.

From: [Vitt, Cory \(CC\)](#)
To: [Winsor, Jennifer \(CC\)](#)
Cc: [Lundmark, Brian \(CC\)](#); [Bend, Shane \(CC\)](#); [Barlishen, Kim \(CC\)](#)
Subject: RE: Environment Act Proposal for TAC Review - Alamos Gold Inc. - Gordon Mine - File No. 6074.00 (i.e. Lynn Lake Gold Mine)
Date: September 11, 2020 10:32:56 AM

No concerns.
Office of Drinking Water (ODW)

Cory Vitt, CMMA M.Eng. P.Eng.

(pronouns: they/them/he/him; please don't use "Mr. Vitt")

Approvals Engineer
Office of Drinking Water
Department of Conservation and Climate
1007 Century Street
Winnipeg, Manitoba R3H 0W4
Phone: 204-806-1363
Fax: 204-945-1365
Email: Cory.Vitt@gov.mb.ca

From: [Kelly, Jason \(CC\)](#)
To: [Winsor, Jennifer \(CC\)](#)
Subject: RE: Environment Act Proposal for TAC Review - Alamos Gold Inc. - Gordon Mine - File No. 6074.00
Date: September 11, 2020 12:37:55 PM

Parks and Protected Spaces Branch has reviewed Environment Act Proposal for TAC Review - Alamos Gold Inc. - Gordon Mine - File No. 6074.00 submitted pursuant to the Environment Act. The Branch has no comments or concerns to offer as it does not affect any provincial parks, park reserves or ecological reserves.

From: [Porteous, Marianne \(ARD\)](#)
To: [Winsor, Jennifer \(CC\)](#)
Subject: RE: Environment Act Proposal for TAC Review - Alamos Gold Inc. - Gordon Mine - File No. 6074.00
Date: October 16, 2020 4:19:46 PM

Hi Jennifer,

Comments from Peatlands:

2.3.3 Environmental Protection, Mitigation and Management

- Planning and financing activities to offset or compensate for unavoidable adverse effects on environmental resources such as aquatic habitats.

Although the majority of project (at both the MacLellan and Gordon sites) will use the existing access roads, if there is development of new resource or access roads or crossings in or around boreal wetlands (bogs, fens, marshes, swamps, or shallow open water), then the proponent must follow the mitigation sequence described in the Boreal Wetlands Conservation Codes of Practice; which is to avoid, minimize, and offset for permanent impacts to Crown wetlands that result from resource road development. The Codes of Practice can be found here:

https://gov.mb.ca/sd/pubs/forestry_peatlands/boreal_codes_practice.pdf

Comments from Forestry

The proponent needs to provide shapefiles for analyzing the impact to timber planned for removal/clearing in the exploration and development phases of the proposed operation. Impacts to forest resources will be analyzed and a timber damage appraisal invoice will be assessed for payment by the proponent. These shapefiles need to be submitted to Forestry Branch or Crown Lands Branch staff in the Northeast Region.

Shapes can be submitted in .shp, .gpx, .kml or .kmz file formats prior to commencing operations.

Marianne

From: [Nicklin, Darren \(CC\)](#)
To: [Winsor, Jennifer \(CC\)](#)
Cc: [Hay, David \(CC\)](#)
Subject: RE: Environment Act Proposal for TAC Review - Alamos Gold Inc. - Gordon Mine - File No. 6074.00
Date: September 11, 2020 1:33:40 PM

Hello Jennifer,

Any water control works as defined below, would require a license.

water control works" means any dyke, dam, surface or subsurface drain, drainage, improved natural waterway, canal, tunnel, bridge, culvert borehole or contrivance for carrying or conducting water, that

(a) temporarily or permanently alters or may alter the flow or level of water, including but not limited to water in a water body, by any means, including drainage, or

(b) changes or may change the location or direction of flow of water, including but not limited to water in a water body, by any means, including drainage;

Under our new regulations this would be covered off in the Environment Act License.

When licence or registration not required

5.1 A person does not require a licence or registration

(a) to construct, establish, operate or maintain water control works that are the subject of a

licence issued under *The Environment Act*;

Darren Nicklin

Senior Water Resource Officer
Conservation and Climate

Darren.Nicklin@gov.mb.ca Cell: (204) 572-7265

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